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RILEY, MARCUS T	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/773,423	Applicant(s) FURUYA, TOMOYUKI	
	Examiner MARCUS T. RILEY	Art Unit 2625	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on 21 January 2009.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-14 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-14 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 09 February 2004 is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date 12/04/2007; 08/06/2004.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. This office action is responsive to applicant's remarks received on October 27, 2008. Claims 1-14 remain pending.

Response to Arguments

2. Applicant's arguments with respect to amended claims 1, 7 & 12 filed on October 27, 2008 has have been fully considered but they are not persuasive.

A: Applicant's Remarks

For Applicant's remarks, see "*Applicant Arguments/Remarks Made in an Amendment*" filed October 27, 2008.

A: Examiner's Response

Applicant argues that Shimzu does not remedy the deficiencies of Ohnishi because Shimzu does not perform rendering on a scanline basis by processing all the rendering instructions covering that scanline and developing a bitmap only for that scanline each time. Applicant also argues that the seconding rendering means is missing from Shimizu. Furthermore, applicant argues that Shimizu does not disclose "second rendering means for subjecting the rendering instructions to... n-value conversion processing (color conversion).., storing the results in the form of an n-valued pattern (binarization, for example), and rendering the n-valued pattern of each scan line into n-valued bitmap data (binary rendering, for example); ... and control means for.., exercising control so as to... cause said second rendering means to form the n-valued

bitmap data if said determining means determines that the rendering instructions do not include a rendering instruction other than the overwrite, wherein said control means causes said first rendering means or said second rendering means to develop all the rendering instructions for one scan line into bitmap data before rendering the next scan line."

Examiner understands Applicant's argument but respectfully disagrees. Ohnishi either alone or in combination discloses, teaches or suggests Applicant's claimed invention. Shimzu does perform rendering on a scanline basis by processing all the rendering instructions covering that scanline and developing a bitmap only for that scanline each time and the render seconding rendering means. (See Figure 8 where "FIG. 8 is a flowchart showing the overview of rendering process **"...the mask information 151 to be supported is composed of run length** (one scan line in the X direction), **convex polygon with no edge crossed, bit map image, and bit map font.**" column 6, lines 21-24).

control means for extracting edges of objects in the rendering instructions in each scan line and exercising control so as to cause said first rendering means to form the multivalued bitmap data between the edges if said determining means determines that the rendering instructions include a rendering instruction other than the overwrite (*"**At step 901, the CPU 12 extracts scan line information (x min, x max) in the Y coordinate from the mask information of intermediate data created in the management RAM 7 through the PDL analysis task 120,** and writes corresponding background information into a band raster memory 10 by referring to the current background information and logical drawing mode."* column 8, lines 10-16); See also (*"...in the color printers of **printing color PDL information in multi-value representation without having a quantity of a full bit map**, the banding process is executed with the highest color gradation, **when the banding process is permitted**..."* column 16, lines 5-8);

wherein said control means causes said first rendering means or said second rendering means to develop all the rendering instructions for one scan line into bitmap data before rendering the next scan line (See Figure 8 where *"FIG. 8 is a flowchart showing the overview of band rendering*

*process "...the mask information 151 to be supported is composed of run length **(one scan line in the X direction),** convex polygon with no edge crossed, **bit map image, and bit map font.**"* column 6, lines 21-24).

Ohnishi discloses the second rendering means a second rendering means for subjecting the rendering instructions to color processing and n-value conversion processing color by color of the rendering instructions (See Figure 26 where "**Step S26-21 shows** wherein the color process, such as color correction, color conversion or binarization **(n-valued process),** is performed in consonance with the attribute of the object." column 8, lines 53-56). See also (Figure 21 Step S21-17*"When the processing for one line has been completed (21-16), the* ***optimal color correction, color conversion and binarization (n-valued) processes are performed for the object in each buffer*** *(21-17)."* column 6, lines 27-31);

and storing the results in the form of an n-valued pattern, and rendering the n-valued pattern of each line into n-valued bitmap data (See Figure 26, Steps S26-19 thru Steps S26-22 and also see Figure 28. **Step S26-19 shows** wherein when the flag bit is set, the start and end coordinates of the **bit that is set are stored in the table 70 (FIG. 28).** Step S26-20 shows wherein pertinent portion of the **multi-value bit map is referred to by using the coordinates stored in the table 70. Step S26-21 shows** wherein the color process, such as color correction, color conversion or binarization **(n-valued process),** is performed in consonance with the attribute of the object. Step S26-22 shows wherein the data obtained by the color process are sequentially **developed in the pertinent area of the device bit map**." column 8, lines 48-59);

Accordingly, for at least the reasons noted above, Claim 1 is not allowable over Ohnishi and Shimizu, taken separately or in combination.

Independent Claims 7 and 12 are directed, respectively, to a method and a printer driver, and correspond to apparatus Claim 1, and are not patentable for at least the same reasons as discussed above in connection with Claim 1.

The other claims in this application are each dependent from one or another of the independent claims and are not patentable for the same reasons.

As a result, Applicant's application is not in condition for allowance.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. **Claims 1-3, 6-9 & 12-14** are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohnishi '465 (US 7,853,465 B1 hereinafter, Ohnishi '465) in combination with Shimzu (US 6,490,055 hereinafter, Shimzu '055).

Regarding claim 1; Ohnishi '465 discloses a printing control apparatus for outputting print data and executing printing, comprising: (See Figures 1 and 2 where they each show a printer that outputs and prints data. *"FIG. 2 is a conceptual diagram **showing a process during which data, which is associated with an image processing control program** and which is stored in the storage device of a medium reading unit, is read by a central processing unit **and a print command is input by an input unit for the transmission of data to a printer;**"* column 2, lines 14-19);

storage means, to which rendering instructions are input, for storing the rendering instructions page by page (See Figures 1 and 2 where they each show a main storage unit *"FIG. 2 is a conceptual diagram showing **a process during which data**, which is associated with an image processing control program and **which is stored in the storage device of a medium reading unit**, is read by a central processing unit **and a print command is input by an input unit for the transmission of data to a printer;**"* column 2, lines 14-19);

a first rendering means for developing rendering instructions of each line into multi-valued bitmap data and subjecting the multi-valued bitmap data to color processing and n-value conversion processing (See Figure 3 where Fig. 3 *"... **color correction is performed for multi-value color data** that are included in the drawing command. The **obtained color data are then used to perform the development process, and a multi-value bit map image is generated.** At the same time as the **color data are being developed to generate the bit map...** Then while referring to the pattern plane, **color conversion,** which is consonant with the attribute of an object, **is performed for the obtained multi-value bit map, and the resultant bit map is binarized (n-valued) to obtain a device bit map.**"* column 4, lines 6-21);

a second rendering means for subjecting the rendering instructions to color processing and n-value conversion processing color by color of the rendering instructions (See Figure 26 where "**Step S26-21 shows** wherein the color process, such as color correction, color conversion or binarization **(n-valued process),** is performed in consonance with the attribute of the object." column 8, lines 53-56). See also (Figure 21 Step S21-17 *"When the processing for one line has been completed (21-16), the **optimal color correction, color conversion and binarization (n-valued) processes are performed for the object in each buffer** (21-17)."* column 6, lines 27-31);

storing the results in the form of an n-valued pattern, and rendering the n-valued pattern of each line into n-valued bitmap data (See Figure 26, Steps S26-19 thru Steps S26-22 and also see Figure 28. **Step S26-19 shows** wherein when the flag bit is set, the start and end coordinates of the **bit that is set are stored in the table 70 (FIG. 28).** Step S26-20 shows wherein pertinent portion of the **multi-value bit map is referred to by using the coordinates stored in the table 70. Step S26-21 shows** wherein the color process, such as color correction, color conversion or binarization **(n-valued process),** is performed in consonance with the attribute of the object. Step S26-22 shows wherein the data obtained by the color process are sequentially **developed in the pertinent area of the device bit map.**" column 8, lines 48-59);

Ohnishi '465 does not expressly disclose determining means for reading out rendering instructions that have been stored in said storage means and determining whether the rendering instructions include a rendering instruction other than overwrite; control means for extracting edges of objects in the rendering instructions in each scan line and exercising control so as to cause said first rendering means to form the multivalued bitmap data between the edges if said determining means determines that the rendering instructions include a rendering instruction other than the overwrite, and to cause said second rendering means to form the n-valued bitmap data if said determining means determines that the rendering instructions do not include a rendering instruction other than overwrite; wherein said control means causes said first rendering means or said second rendering means to develop all the rendering instructions for one scan line into bitmap data before rendering the next scan line.

Shimizu '055 discloses determining means for reading out rendering instructions that have been stored in said storage means and determining whether the rendering instructions include a rendering instruction other than overwrite (See Figure 2 whereas "*A program ROM 6 is a **memory for storing processing procedures (software)** according to the invention as shown in FIG. 2, a **CPU 12 performing the reading of color PDL data in accordance with the software...***" column 4, lines 38-42). See also ("*Turning back to FIG. 2, ... a check is made to see whether or not data is a setting command for various attributes... If YES, a corresponding processing is performed for the conversion into data form **readable by the hard (or soft) renderer at step 107.***" column 6, lines 61-67).

control means for extracting edges of objects in the rendering instructions in each scan line and exercising control so as to cause said first rendering means to form the multivalued bitmap data between the edges if said determining means determines that the rendering instructions include a rendering instruction other than the overwrite ("*At step 901, **the CPU 12 extracts scan line information (x min, x max) in the Y coordinate from the mask information of intermediate data created in the***

management RAM 7 through the PDL analysis task 120, *and writes corresponding background information into a band raster memory 10 by referring to the current background information and logical drawing mode."* column 8, lines 10-16); See also (*"...in the color printers of* ***printing color PDL information in multi-value representation without having a quantity of a full bit map****, the banding process is executed with the highest color gradation,* ***when the banding process is permitted****..."* column 16, lines 5-8);

and to cause said second rendering means to form the n-valued bitmap data if said determining means determines that the rendering instructions do not include a rendering instruction other than overwrite; (See Figure 26, Steps S26-19 thru Steps S26-22 and also see Figure 28. Step S26-20 shows wherein pertinent portion of the **multi-value bit map is referred to by using the coordinates stored in the table 70...** Step S26-22 shows wherein the data obtained by the color process are sequentially **developed in the pertinent area of the device bit map.**" column 8, lines 48-59);

wherein said control means causes said first rendering means or said second rendering means to develop all the rendering instructions for one scan line into bitmap data before rendering the next scan line (See Figure 8 where *"FIG. 8 is a flowchart showing the overview of band rendering process "...the mask information 151 to be supported is composed of run length* ***(one scan line in the X direction),*** *convex polygon with no edge crossed,* ***bit map image, and bit map font.****"* column 6, lines 21-24).

Ohnishi '465 and Shimzu '055 are combinable because they are from same field of endeavor of a printing apparatus (*"The present invention relates to a color printing apparatus..."* Shimzu '055 at column 1, lines 10).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the printing apparatus as taught by Ohnishi '465 by adding determining means for reading out rendering instructions that have been stored in said storage means and determining whether the rendering instructions include a rendering instruction other than overwrite; control means for extracting edges of objects in the rendering instructions in each line and exercising control so as to cause said first rendering means to form the multivalued bitmap

data between the edges if said determining means determines that the rendering instructions include a rendering instruction other than the overwrite, and to cause said second rendering means to form the n-valued bitmap data if said determining means determines that the rendering instructions do not include a rendering instruction other than overwrite; wherein said control means causes said first rendering means or said second rendering means to develop the rendering instruction into bitmap data line by line as taught by Shimzu '055. The motivation for doing so would have been because it advantageous to provide a color printing apparatus at a lower cost and with a certain precision (*"...it is an object of the present invention to provide a color printing apparatus which can realize a color logical drawing at lower cost and with a certain precision."* Shimzu '055 at column 2, lines 28-31). Therefore, it would have been obvious to combine Ohnishi '465 with Shimzu '055 to obtain the invention as specified in claim 1.

Regarding claim 2; Ohnishi '465 discloses where said first rendering means includes: means for generating multi-valued bitmap data based upon the rendering instructions (See Figure 3 where Fig. 3 *"... **color correction is performed for multi-value color data** that are included in the drawing command. The **obtained color data are then used to perform the development process, and a multi-value bit map image is generated.**"* column 4, lines 6-11);

first color correcting means for performing a color correction of the multi-valued bitmap data (See Figure 3 where Fig. 3 *"... **color correction is performed for multi-value color data** that are included in the drawing command."* column 4, lines 6-9);

first color converting means for converting colors of the multi-valued bitmap data that has been subjected to the color correction by said first color correcting means to multi-valued bitmap data of another color space (See Figure 3 where Fig. 3 *Then while referring to the pattern plane, **color***

conversion, *which is consonant with the attribute of an object,* ***is performed for the obtained multi-value bit map, and the resultant bit map is binarized (n-valued) to obtain a device bit map."*** column 4, lines 15-19);

and n-value converting means for subjecting the multi-valued bitmap data that has been subjected to the color conversion by said first color converting means to an n-value conversion (See Figure 3 where Fig. 3 *"...* ***color correction is performed for multi-value color data*** *that are included in the drawing command. The* ***obtained color data are then used to perform the development process, and a multi-value bit map image is generated.*** *At the same time as the* ***color data are being developed to generate the bit map...*** *Then while referring to the pattern plane,* ***color conversion,*** *which is consonant with the attribute of an object,* ***is performed for the obtained multi-value bit map, and the resultant bit map is binarized (n-valued) to obtain a device bit map."*** column 4, lines 6-21);

Regarding claim 3; Ohnishi '465 discloses where said second rendering means includes: second color correcting means for correcting colors of an image included in the rendering instructions (See Figure 26 where "**Step S26-21 shows** wherein the color process, such as color correction, color conversion or binarization **(n-valued process),** is performed in consonance with the attribute of the object." column 8, lines 53-56).

second color converting means for converting colors of the image that has been subjected to the color correction by said second color correcting means to colors of another color space image n-value converting means for subjecting the image data of the image that has been subjected to the color conversion by said second color converting means to an n-value conversion and creating an n-valued pattern (See Figure 26 where "**Step S26-21 shows** wherein the color process, such as color correction, color conversion or binarization **(n-valued process),** is performed in consonance with the attribute of the object." column 8, lines 53-56). See also (Figure 21 Step S21-17 *"When the processing for one line has been completed (21-16), the* ***optimal color correction, color conversion and binarization (n-valued) processes are performed for the object in each buffer*** *(21-17)."* column 6, lines 27-31);

and means for creating n-valued bitmap data based upon the n-valued pattern obtained by the n-value conversion performed by said image n-value converting means (See Figure 26 where "**Step**

S26-21 shows wherein the color process, such as color correction, color conversion or binarization **(n-valued process),** is performed in consonance with the attribute of the object." column 8, lines 53-56). See also (Figure 21 Step S21-17 *"When the processing for one line has been completed (21-16), the **optimal color correction, color conversion and binarization (n-valued) processes are performed for the object in each buffer** (21-17)."* column 6, lines 27-31);

Regarding claim 6; Ohnishi '465 discloses where the value of n is 2 (*"In the optimal color process for each object, for example, **a coefficient for color conversion**, and the **size of a dither matrix** for binarization and a **threshold value are consonant** with the attribute of an object. The **size of an n-valued dither matrix, a threshold value and the number of sheets may be consonant** with the attribute of an object."* column 7, lines 27-32).

Regarding claim 7; Ohnishi '465 discloses a printing control method for outputting print data and executing printing, comprising: (See Figures 1 and 2 where they each show a printer that outputs and prints data. *"FIG. 2 is a conceptual diagram **showing a process during which data, which is associated with an image processing control program** and which is stored in the storage device of a medium reading unit, is read by a central processing unit **and a print command is input by an input unit for the transmission of data to a printer;**"* column 2, lines 14-19);

a storage step of inputting rendering instructions and storing the rendering instructions in a memory page by page (See Figures 1 and 2 where they each show a main storage unit *"FIG. 2 is a conceptual diagram showing **a process during which data**, which is associated with an image processing control program and **which is stored in the storage device of a medium reading unit**, is read by a central processing unit **and a print command is input by an input unit for the transmission of data to a printer;**"* column 2, lines 14-19);

a first rendering step of developing rendering instructions of each line into multi-valued bitmap data and subjecting the multi-valued bitmap data to color processing and n-value conversion processing (See Figure 3 where Fig. 3 *"... **color correction is performed for multi-value color data** that are included in the drawing command. The **obtained color data are then used to perform the development process, and a multi-value bit map image is generated.** At the same time as the **color data are being developed to generate the bit map...** Then while referring to the pattern plane, **color conversion,** which is consonant with the attribute of an object, **is performed for the***

obtained multi-value bit map, and the resultant bit map is binarized (n-valued) to obtain a device bit map." column 4, lines 6-21);

a second rendering step of subjecting the rendering instructions to color processing and n-value conversion processing color by color of the rendering instructions (See Figure 26 where "**Step S26-21 shows** wherein the color process, such as color correction, color conversion or binarization **(n-valued process),** is performed in consonance with the attribute of the object." column 8, lines 53-56). See also (Figure 21 Step S21-17 *"When the processing for one line has been completed (21-16), the* ***optimal color correction, color conversion and binarization (n-valued) processes are performed for the object in each buffer (21-17)."*** column 6, lines 27-31);

storing the results in the form of an n-valued pattern, and rendering the n-valued pattern of each line into n-valued bitmap data (See Figure 26, Steps S26-19 thru Steps S26-22 and also see Figure 28. **Step S26-19 shows** wherein when the flag bit is set, the start and end coordinates of the **bit that is set are stored in the table 70 (FIG. 28).** Step S26-20 shows wherein pertinent portion of the **multi-value bit map is referred to by using the coordinates stored in the table 70. Step S26-21 shows** wherein the color process, such as color correction, color conversion or binarization **(n-valued process),** is performed in consonance with the attribute of the object. Step S26-22 shows wherein the data obtained by the color process are sequentially **developed in the pertinent area of the device bit map.**" column 8, lines 48-59);

Ohnishi '465 does not expressly disclose a determining step of determining whether rendering instructions that have been read out of the memory include a rendering instruction other than overwrite; a control step of extracting edges of objects in the rendering instructions in each scan line and exercising control so as to cause said first rendering step to form the multivalued bitmap data between the edges if it is determined in said determining step that the rendering instructions include a rendering instruction other than over the by overwrite, and to cause said second rendering step to form the n-valued bitmap data if it is determined in said determining step that the rendering instructions do not include a rendering instruction other than overwrite; wherein said control means causes said first rendering means or said second

rendering means to develop all the rendering instruction for one scan line into bitmap data before rendering the next scan line.

Shimizu '055 discloses a determining step of determining whether rendering instructions that have been read out of the memory include a rendering instruction other than overwrite (See Figure 2 whereas "*A program ROM 6 is a* ***memory for storing processing procedures (software)*** *according to the invention as shown in FIG. 2, a* ***CPU 12 performing the reading of color PDL data in accordance with the software...***" column 4, lines 38-42). See also ("*Turning back to FIG. 2, ... a check is made to see whether or not data is a setting command for various attributes... If YES, a corresponding processing is performed for the conversion into data form* ***readable by the hard (or soft) renderer at step 107.***" column 6, lines 61-67).

a control step of extracting edges of objects in the rendering instructions in each scan line and exercising control so as to cause said first rendering step to form the multivalued bitmap data between the edges if it is determined in said determining step that the rendering instructions include a rendering instruction other than over the by overwrite ("*At step 901,* ***the CPU 12 extracts scan line information (x min, x max) in the Y coordinate from the mask information of intermediate data created in the management RAM 7 through the PDL analysis task 120****, and writes corresponding background information into a band raster memory 10 by referring to the current background information and logical drawing mode.*" column 8, lines 10-16); See also ("*...in the color printers of* ***printing color PDL information in multi-value representation without having a quantity of a full bit map****, the banding process is executed with the highest color gradation,* ***when the banding process is permitted...***" column 16, lines 5-8);

and to cause said second rendering step to form the n-valued bitmap data if it is determined in said determining step that the rendering instructions do not include a rendering instruction other than overwrite (See Figure 26, Steps S26-19 thru Steps S26-22 and also see Figure 28. Step S26-20 shows wherein pertinent portion of the **multi-value bit map is referred to by using the coordinates stored in the table 70**… Step S26-22 shows wherein the data obtained by the color process are sequentially **developed in the pertinent area of the device bit map**." column 8, lines 48-59);

wherein said control means causes said first rendering means or said second rendering means to develop all the rendering instruction for one scan line into bitmap data before rendering the next scan line (See Figure 8 where *"FIG. 8 is a flowchart showing the overview of band rendering process "...the mask information 151 to be supported is composed of run length* ***(one scan line in the X direction),*** *convex polygon with no edge crossed,* ***bit map image, and bit map font.****"* column 6, lines 21-24).

Ohnishi '465 and Shimzu '055 are combinable because they are from same field of endeavor of a printing apparatus (*"The present invention relates to a color printing apparatus..."* Shimzu '055 at column 1, lines 10).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the printing apparatus as taught by Ohnishi '465 by adding a determining step of determining whether rendering instructions that have been read out of the memory include a rendering instruction other than overwrite; a control step of extracting edges of objects in the rendering instructions in each line and exercising control so as to cause said first rendering step to form the multivalued bitmap data between the edges if it is determined in said determining step that the rendering instructions include a rendering instruction other than over the by overwrite, and to cause said second rendering step to form the n-valued bitmap data if it is determined in said determining step that the rendering instructions do not include a rendering instruction other than overwrite; wherein said control means causes said first rendering means or said second rendering means to develop the rendering instruction into bitmap data line by line as taught by Shimzu '055. The motivation for doing so would have been because it advantageous to provide a color printing apparatus at a lower cost and with a certain precision (*"...it is an object of the present invention to provide a color printing apparatus which can realize a color logical drawing at lower cost and with a*

certain precision." Shimzu '055 at column 2, lines 28-31). Therefore, it would have been obvious to combine Ohnishi '465 with Shimzu '055 to obtain the invention as specified in claim 1.

Regarding claim 8; Ohnishi '465 discloses where said first rendering step includes: a step of generating multi-valued bitmap data based upon the rendering instructions (See Figure 3 where Fig. 3 *"... **color correction is performed for multi-value color data** that are included in the drawing command. The **obtained color data are then used to perform the development process, and a multi-value bit map image is generated.**"* column 4, lines 6-11);

a first color correcting step of performing a color correction of the multi-valued bitmap data of another color space; (See Figure 3 where Fig. 3 *"... **color correction is performed for multi-value color data** that are included in the drawing command."* column 4, lines 6-9);

and an n-value converting step of subjecting the multi-valued bitmap data that has been subjected to the color conversion at said first color converting step to an n-value conversion (See Figure 3 where Fig. 3 *"... **color correction is performed for multi-value color data** that are included in the drawing command. The **obtained color data are then used to perform the development process, and a multi-value bit map image is generated.** At the same time as the **color data are being developed to generate the bit map...** Then while referring to the pattern plane, **color conversion,** which is consonant with the attribute of an object, **is performed for the obtained multi-value bit map, and the resultant bit map is binarized (n-valued) to obtain a device bit map.**"* column 4, lines 6-21);

Regarding claim 9; Ohnishi '465 discloses where said second rendering step includes: a second color correcting step of correcting colors of an image included in the rendering instructions (See Figure 26 where "**Step S26-21 shows** wherein the color process, such as color correction, color conversion or binarization **(n-valued process),** is performed in consonance with the attribute of the object." column 8, lines 53-56).

a second color converting step of converting colors of the image that has been subjected to the color correction in said second color correcting step to colors of another color space an

image n-value converting step of subjecting the image data of the image that has been subjected to the color conversion at said second color converting step to an n-value conversion and creating an n-valued pattern (See Figure 26 where "**Step S26-21 shows** wherein the color process, such as color correction, color conversion or binarization **(n-valued process),** is performed in consonance with the attribute of the object." column 8, lines 53-56). See also (Figure 21 Step S21-17 *"When the processing for one line has been completed (21-16), the* ***optimal color correction, color conversion and binarization (n-valued) processes are performed for the object in each buffer*** *(21-17)."* column 6, lines 27-31);

and a step of creating n-valued bitmap data based upon the n-valued pattern obtained by the n-value conversion performed in said image n-value converting step (See Figure 26 where "**Step S26-21 shows** wherein the color process, such as color correction, color conversion or binarization **(n-valued process),** is performed in consonance with the attribute of the object." column 8, lines 53-56). See also (Figure 21 Step S21-17 *"When the processing for one line has been completed (21-16), the* ***optimal color correction, color conversion and binarization (n-valued) processes are performed for the object in each buffer*** *(21-17)."* column 6, lines 27-31);

Regarding claim 12; Ohnishi '465 discloses a printer driver for receiving rendering instructions from an application, creating print data and outputting the print data to a printing apparatus, comprising (See Figures 1 and 2 where they each show a printer that outputs and prints data. It is well known in art and can be inferred that a printer includes a driver. *"FIG. 2 is a conceptual diagram* ***showing a process during which data, which is associated with an image processing control program*** *and which is stored in the storage device of a medium reading unit, is read by a central processing unit* ***and a print command is input by an input unit for the transmission of data to a printer;"*** column 2, lines 14-19):

storage means, to which rendering instructions are input from the application, for storing the rendering instructions in a memory page by page (See Figures 1 and 2 where they each show a main storage unit *"FIG. 2 is a conceptual diagram showing* ***a process during which data****, which is associated with an image processing control program and* ***which is stored in the storage device of a medium reading unit****, is read by a central*

processing unit ***and a print command is input by an input unit for the transmission of data to a printer;"*** column 2, lines 14-19);

a first rendering means for expanding rendering instructions of each scan line, which rendering instructions have been stored in the memory, into multi-valued bitmap data and subjecting the multi-valued bitmap data to color processing and n-value conversion processing (See Figure 3 where Fig. 3 *"...* ***color correction is performed for multi-value color data*** *that are included in the drawing command. The* ***obtained color data are then used to perform the development process, and a multi-value bit map image is generated.*** *At the same time as the* ***color data are being developed to generate the bit map...*** *Then while referring to the pattern plane,* ***color conversion,*** *which is consonant with the attribute of an object,* ***is performed for the obtained multi-value bit map, and the resultant bit map is binarized (n-valued) to obtain a device bit map."*** column 4, lines 6-21);

a second rendering means for subjecting the rendering instructions that have been stored in the memory to color processing and n-value conversion processing color by color of the rendering instructions (See Figure 26 where "**Step S26-21 shows** wherein the color process, such as color correction, color conversion or binarization **(n-valued process),** is performed in consonance with the attribute of the object." column 8, lines 53-56). See also (Figure 21 Step S21-17 *"When the processing for one line has been completed (21-16), the* ***optimal color correction, color conversion and binarization (n-valued) processes are performed for the object in each buffer*** *(21-17)."* column 6, lines 27-31);

storing the results in the form of an n-valued pattern, and rendering the n-valued pattern of each line into n-valued bitmap data (See Figure 26, Steps S26-19 thru Steps S26-22 and also see Figure 28. **Step S26-19 shows** wherein when the flag bit is set, the start and end coordinates of the **bit that is set are stored in the table 70 (FIG. 28).** Step S26-20 shows wherein pertinent portion of the **multi-value bit map is referred to by using the coordinates stored in the table 70. Step S26-21 shows** wherein the color process, such as color correction, color conversion or binarization **(n-valued process),** is performed in consonance with the attribute of the object. Step S26-22 shows wherein the data obtained by the color process are sequentially **developed in the pertinent area of the device bit map**." column 8, lines 48-59);

Ohnishi '465 does not expressly disclose determining means for reading out rendering instructions that have been stored in the memory and determining whether the rendering instructions include a rendering instruction other than by overwrite; control means for extracting edges of objects in the rendering instructions in each scan line and exercising control so as to cause said first rendering means to form multivalued bitmap data between the edges if said determining means determines that the rendering instructions include a rendering instruction other than the by overwrite, and to cause said second rendering means to form multivalued bitmap data if said determining means determines that the rendering instructions do not include a rendering instruction other than the overwrite; wherein said control means causes said first rendering means or said second rendering means to develop the rendering instruction into bitmap data line by line.

Shimizu '055 discloses determining means for reading out rendering instructions that have been stored in the memory and determining whether the rendering instructions include a rendering instruction other than by overwrite (See Figure 2 whereas "*A program ROM 6 is a **memory for storing processing procedures (software)** according to the invention as shown in FIG. 2, a **CPU 12 performing the reading of color PDL data in accordance with the software...***" column 4, lines 38-42). See also ("*Turning back to FIG. 2, ... a check is made to see whether or not data is a setting command for various attributes... If YES, a corresponding processing is performed for the conversion into data form **readable by the hard (or soft) renderer at step 107.***" column 6, lines 61-67).

control means for extracting edges of objects in the rendering instructions in each scan line and exercising control so as to cause said first rendering means to form multivalued bitmap data between the edges if said determining means determines that the rendering instructions include a rendering instruction other than the by overwrite ("*At step 901, **the CPU 12 extracts scan line information (x min, x max) in the Y coordinate from the mask information of intermediate data created in the management***

***RAM 7 through the PDL analysis task 120,** and writes corresponding background information into a band raster memory 10 by referring to the current background information and logical drawing mode."* column 8, lines 10-16); See also (*"...in the color printers of **printing color PDL information in multi-value representation without having a quantity of a full bit map,** the banding process is executed with the highest color gradation, **when the banding process is permitted**..."* column 16, lines 5-8);

and to cause said second rendering means to form multivalued bitmap data if said determining means determines that the rendering instructions do not include a rendering instruction other than the overwrite (See Figure 26, Steps S26-19 thru Steps S26-22 and also see Figure 28. Step S26-20 shows wherein pertinent portion of the **multi-value bit map is referred to by using the coordinates stored in the table 70**... Step S26-22 shows wherein the data obtained by the color process are sequentially **developed in the pertinent area of the device bit map.**" column 8, lines 48-59);

wherein said control means causes said first rendering means or said second rendering means to develop all the rendering instruction for one scan line into bitmap data before rendering the next scan line (See Figure 8 where *"FIG. 8 is a flowchart showing the overview of band rendering process "...the mask information 151 to be supported is composed of run length **(one scan line in the X direction),** convex polygon with no edge crossed, **bit map image, and bit map font.**"* column 6, lines 21-24).

Ohnishi '465 and Shimzu '055 are combinable because they are from same field of endeavor of a printing apparatus (*"The present invention relates to a color printing apparatus..."* Shimzu '055 at column 1, lines 10).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the printing apparatus as taught by Ohnishi '465 by adding determining means for reading out rendering instructions that have been stored in the memory and determining whether the rendering instructions include a rendering instruction other than by overwrite; control means for extracting edges of objects in the rendering instructions in each line and

exercising control so as to cause said first rendering means to form multivalued bitmap data between the edges if said determining means determines that the rendering instructions include a rendering instruction other than the by overwrite, and to cause said second rendering means to form multivalued bitmap data if said determining means determines that the rendering instructions do not include a rendering instruction other than the overwrite; wherein said control means causes said first rendering means or said second rendering means to develop the rendering instruction into bitmap data line by line as taught by Shimzu '055. The motivation for doing so would have been because it advantageous to provide a color printing apparatus at a lower cost and with a certain precision (*"...it is an object of the present invention to provide a color printing apparatus which can realize a color logical drawing at lower cost and with a certain precision."* Shimzu '055 at column 2, lines 28-31). Therefore, it would have been obvious to combine Ohnishi '465 with Shimzu '055 to obtain the invention as specified in claim 1

Regarding claim 13; Ohnishi '465 discloses where said first rendering means includes: means for generating multi-valued bitmap data based upon the rendering instructions (See Figure 3 where Fig. 3 *"... **color correction is performed for multi-value color data** that are included in the drawing command. The **obtained color data are then used to perform the development process, and a multi-value bit map image is generated.**"* column 4, lines 6-11);

first color correcting means for performing a color correction of the multi-valued bitmap data (See Figure 3 where Fig. 3 *"... **color correction is performed for multi-value color data** that are included in the drawing command."* column 4, lines 6-9);

first color converting means for converting colors of the multi-valued bitmap data that has been subjected to the color correction by said first color correcting means to multi-valued

bitmap data of another color space (See Figure 3 where Fig. 3 *Then while referring to the pattern plane, **color conversion,** which is consonant with the attribute of an object, **is performed for the obtained multi-value bit map, and the resultant bit map is binarized (n-valued) to obtain a device bit map.**"* column 4, lines 15-19);

and n-value converting means for subjecting the multi-valued bitmap data that has been subjected to the color conversion by said first color converting means to an n-value conversion (See Figure 3 where Fig. 3 *"... **color correction is performed for multi-value color data** that are included in the drawing command. The **obtained color data are then used to perform the development process, and a multi-value bit map image is generated.** At the same time as the **color data are being developed to generate the bit map...** Then while referring to the pattern plane, **color conversion,** which is consonant with the attribute of an object, **is performed for the obtained multi-value bit map, and the resultant bit map is binarized (n-valued) to obtain a device bit map.**"* column 4, lines 6-21);

Regarding claim 14; Ohnishi '465 discloses a where said second rendering means includes: second color correcting means for correcting colors of an image included in the rendering instructions (See Figure 26 where "**Step S26-21 shows** wherein the color process, such as color correction, color conversion or binarization **(n-valued process),** is performed in consonance with the attribute of the object." column 8, lines 53-56).

second color converting means for converting colors of the image that has been subjected to the color correction by said second color correcting means to colors of another color space image n-value converting means for subjecting the image data of the image that has been subjected to the color conversion by said second color converting means to an n-value conversion and creating an n-valued pattern (See Figure 26 where "**Step S26-21 shows** wherein the color process, such as color correction, color conversion or binarization **(n-valued process),** is performed in consonance with the attribute of the object." column 8, lines 53-56). See also (Figure 21 Step S21-17 *"When the processing for one line has been completed (21-16), the **optimal color correction, color conversion and binarization (n-valued) processes are performed for the object in each buffer** (21-17)."* column 6, lines 27-31);

and means for creating n-valued bitmap data based upon the n-valued pattern obtained by the n-value conversion performed by said image n-value converting means (See Figure 26 where "**Step S26-21 shows** wherein the color process, such as color correction, color conversion or binarization **(n-valued process),** is performed in consonance with the attribute of the object." column 8, lines 53-56). See also (Figure 21 Step S21-17 *"When the processing for one line has been completed (21-16), the **optimal color correction, color conversion and binarization (n-valued) processes are performed for the object in each buffer** (21-17)."* column 6, lines 27-31);

5. **Claims 4, 5, 10 & 11** are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohnishi '465 in combination with Shimzu '055.

Regarding claim 4; Ohnishi '465 as modified does not expressly disclose where said storage means sorts and stores entered rendering instructions, and said first and second rendering means read out and process the rendering instructions in the order in which they have been sorted and stored in said storage means.

Shimzu '055 discloses where said storage means sorts and stores entered rendering instructions, and said first and second rendering means read out and process the rendering instructions in the order in which they have been sorted and stored in said storage means (*"Each mask object finally created **is made by subdividing a page memory for the rendering with smaller memory capacity than the full page memory,** i.e., banding, into multiple bands (desirably a power of 2 in height, and optimally about 512 dots), **sorting each mask object for each band,** and making up a link list as shown in FIG. 5D within each band."* column 6, lines 38-44).

Ohnishi '465 and Shimzu '055 are combinable because they are from same field of endeavor of a printing apparatus (*"The present invention relates to a color printing apparatus..."* Shimzu '055 at column 1, lines 10).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the printing apparatus as taught by Ohnishi '465 by adding where said storage

means sorts and stores entered rendering instructions, and said first and second rendering means read out and process the rendering instructions in the order in which they have been sorted and stored in said storage means as taught by Shimzu '055. The motivation for doing so would have been because it advantageous to provide a color printing apparatus at a lower cost and with a certain precision (*"...it is an object of the present invention to provide a color printing apparatus which can realize a color logical drawing at lower cost and with a certain precision."* Shimzu '055 at column 2, lines 28-31). Therefore, it would have been obvious to combine Ohnishi '465 with Shimzu '055 to obtain the invention as specified in claim 1.

Regarding claim 5; Shimzu '055 discloses where the sorting order is in a direction from the top to the bottom of a page (*"Each mask object finally created **is made by subdividing a page memory for the rendering with smaller memory capacity than the full page memory,** i.e., banding, into multiple bands (desirably a power of 2 in height, and optimally about 512 dots), **sorting each mask object for each band,** and making up a link list as shown in FIG. 5D within each band."* column 6, lines 38-44).

Regarding claim 10; Shimzu '055 discloses where inputted rendering instructed are sorted and stored in the memory in said storage step, and the rendering instructions are read out and processed in said first and second rendering steps in the order in which they have been sorted and stored in the memory. (*"Each mask object finally created **is made by subdividing a page memory for the rendering with smaller memory capacity than the full page memory,** i.e., banding, into multiple bands (desirably a power of 2 in height, and optimally about 512 dots), **sorting each mask object for each band,** and making up a link list as shown in FIG. 5D within each band."* column 6, lines 38-44).

Regarding claim 11; Shimzu '055 discloses where the sorting order is in a direction from the top to the bottom of a page. (*"Each mask object finally created **is made by subdividing a page memory for the rendering with smaller memory capacity than the full page memory,** i.e., banding, into multiple bands (desirably a power of 2 in height, and optimally about 512 dots), **sorting each mask object for each band,** and making up a link list as shown in FIG. 5D within each band."* column 6, lines 38-44).

Examiner Notes

6. The Examiner cites particular columns and line numbers in the references as applied to the claims above for the convenience of the applicant. Although the specified citations are representative of the teachings in the art and are applied to the specific limitations within the individual claim, other passages and figures may apply as well. It is respectfully requested that, in preparing responses, the applicant fully considers the references in its entirety as potentially teaching all or part of the claimed invention, as well as the context of the passage as taught by the prior art or as disclosed by the Examiner.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MARCUS T. RILEY whose telephone number is (571)270-1581. The examiner can normally be reached on Monday - Friday, 7:30-5:00, est.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David K. Moore can be reached on 571-272-7437. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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